



Analysis of Gas, Oil, and Coal Company Performance during Pandemic of Covid-19: A Case Study of Indonesia

Dedi Kusmayadi^{1*}, Yusuf Abdullah², Irman Firmansyah¹

¹Department of Accounting, Faculty of Economics and Business, Siliwangi University, Tasikmalaya, Indonesia, ²Master of Management Program, Faculty of Postgraduate, Siliwangi University, Tasikmalaya, Indonesia. *E-mail: dedikusmayadi@unsil.ac.id

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ABSTRACT

Energy potential and demand in Indonesia continues to grow, especially for coal power generation needs. Likewise, energy needs derived from gas and oil for industrial, household, and transportation needs, even during the COVID-19 pandemic. Therefore, energy companies must have good performance to meet these needs. This study aims to determine the performance of energy companies, especially in gas and oil companies and coal companies, and the factors that influence them. The study was conducted in the last 3 years, namely 2018 to 2020 where there was a transition between before and during the pandemic. The study results found that there was a significant decrease between performance before the pandemic and during the pandemic. The decline was felt mainly by gas and oil companies. In addition, company size and liquidity are the most important factors to maintain the performance of energy companies. This is because the need for working capital to run an energy company is very large so that if it experiences a lack of funds, the company has the potential not to achieve the expected performance. In addition, of the two types of companies studied, coal companies significantly influence the performance of energy companies. This is in line with the huge energy demand from coal in Indonesia and the abundant coal reserves so that the opportunity to earn profits is greater than that of gas and oil companies.

Keywords: Gas and Oil Companies, Coal Companies, COVID-19, Performance

JEL Classifications: K32, L25, B23

1. INTRODUCTION

Energy is an essential resource for community development and social welfare (Samuel et al., 2013). In Indonesia, the total primary energy production in 2018 comprising natural coal, gas, oil, and renewable energy reached 411.6 MTOE. Whereas in 2018, the total energy consumed by households was 16%, Industry 36%, transportation 40%, commercial 6%, and other sectors 2% of the 114 MTOE (DEN, 2019).

A large number of energy needed in Indonesia causes energy industry companies to work hard to provide energy needs. It occurs because the industry is a pathway to enhance the welfare of people so that they can live decently with higher standards. With this in mind, industrial development has become a prominent part of long-term

economic development (Hadi et al., 2021). Energy companies good operational performances of energy companies should support this situation to prevent them from having various obstacles, notably during the Covid-19 Pandemic. This is evident that COVID-19 has globally given negative impacts in health aspects and industrial milieus in the last few years (Indupurnahayu et al., 2021). Concerns arise if the energy supply does not meet the needs of a country because it will reduce its economic growths. In particular, several conditions generally occur in developing countries: mismatch between energy supply and demands, dependence on foreign countries, inefficient use of energy, and frequent power outages (Khan and Ahmad, 2008; Tang, 2009; Alter and Syed, 2011).

The huge potential of mining goods supports the existence of energy companies in Indonesia. Figure 1 is the center of the

largest mineral reserves in Indonesia, while Figure 2 shows the distribution of oil and gas reserves in Indonesia.

A large number of potential mining goods in Indonesia shows a guarantee for the existence of mining companies. Therefore, currently, there are many mining companies, including gas and oil companies and coal companies, so that many companies threaten the sustainability of the company's operations. Therefore, companies must not be careless and continue innovating to win the business competition among competitors.

As a result, energy companies ought to be able to maintain their performances even during the pandemic. Anchored in this background, this study aims at determining the impacts of the COVID-19 pandemic on the performances of energy companies in Indonesia. Further, it seeks to identify what determinant factors that can enhance the performances of energy companies.

Empirical studies have reported that the company internal resources are believed to impact company performances through financial management, management, and accounting (Barney, 2001). More specifically, various internal factors proven to affect the company performances encompass Firm size (Yazdanfar, 2013; Fareed et al., 2016; Matar and Eneizan, 2018), Firm Age (Yazdanfar, 2013; Fareed et al., 2016), Leverage (Qureshi, 2009; Fareed et al., 2016; Matar and Eneizan, 2018; Batchimeg, 2017; Dasuki, 2016), and Liquidity (Matar and Eneizan, 2018; Batchimeg, 2017).

2. LITERATURE REVIEW

2.1. Energy Industry Risk

Companies engaged in the energy or mining industry have a very large risk compared to other types of companies because

this industry has many uncertain inputs that must be considered. This will certainly affect its performance. Therefore, companies must carry out good administrative controls to reduce the risk of cost overruns through financial supervision, project management, and a good contract structure (Rendu, 2002). Usually, companies incur very high production costs, including raw material, labor, insurance, depreciation, and others (Güyağüler and Demirel, 2008). The many risks faced by mining companies force companies to have professional management to overcome all business threats. In the end the company must have a good performance.

2.2. Companies' Performances

Measurement of companies' performances based on an accounting viewpoint is an assessment through financial ratios. In other words, it is frequently called financial performance. Commonly, financial performances represent a company's ability to generate profits or profits measured by various ratios to assess the performances of company management. With this in mind, it is also known as profitability (Dai, 2016). Some ratios applied to measure profitability are net profit margin (NPM), return on equity (ROE), and return on assets (ROA). First, the NPM ratio measures the companies' abilities to raise net profit from sales created by a company. Second, ROE designates the companies' abilities to generate after-tax profits with the companies' capital. Eventually, ROA denotes the companies' abilities to exert their entire assets to generate after-tax profits.

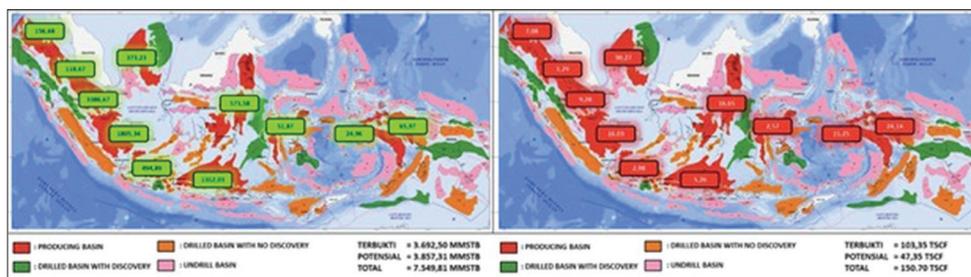
2.3. Pandemic of Covid-19

Corona Virus Disease (hereafter, COVID-19) is an infectious disease caused by a coronavirus interfering with mild to moderate breathing. People suffering from cancer, chronic respiratory diseases, diabetes, and cardiovascular disease are more susceptible

Figure 1: Mining Reserve Center in Indonesia



Figure 2: Distribution of Oil and Gas Reserves in Indonesia (green: distribution of oil, red: distribution of gas)



to get infected (WHO, 2021). The condition is rapidly spreading domestically to other parts of China (Dong et al., 2020). WHO stated that the COVID-19 pandemic began on January 30. It has immediately spread to countries around the globe. It imposes such countries to perform a lockdown policy and banned business activities and social gatherings. However, President Joko Widodo reported that he first found two cases of COVID-19 infection in Indonesia on March 2, 2020 (Djalante et al., 2020). This condition will certainly weaken the community's economy which can undermine the economy of a country. This epidemic has disrupted various activities usually carried out by the community to create increased risks to global economic conditions. Hence, the optimism target in early 2020, namely the world economy can grow to 3.3% could not be attained (Fernandes, 2020). The economic and business arrangements, including energy companies, are one of the types of companies affected by this pandemic, notably in Indonesia. This occurs because Indonesia is one of the most populous countries in the world. Therefore, it is estimated that it will receive bigger impacts than other countries if the pandemic takes place in the long term (ADB, 2020).

2.4. Factors Affecting Energy Company Performances

2.4.1. Firm sizes

Firm sizes or company sizes refer to a scale classified in various ways. The companies' sizes tend to be viewed from the total assets of a company. The companies' strengths in organizing the business are from the total assets owned. On the other hand, while the assets are sourced from debts and own capital. A company with large assets can generate greater profits. The results of research by Yazdanfar (2013), Almajali et al. (2012), Fareed et al. (2016), Matar and Eneizan (2018), Alper and Anbar (2011), Abel and Roux (2016), Hidayat and Firmansyah (2017), Menicucci and Paolucci (2016), Short (1979), Mehari and Aemiro (2013), and Rashid and Kemal (2018) have explicated a relationship between firm size and performance. Therefore, based on the research results, it is predicted that firm sizes can affect the performance of energy companies in Indonesia. So the first hypothesis is:

H_1 : Firm sizes have a positive effect on the performances of energy companies in Indonesia

2.4.2. Firm Age

Firm age or the company's age is a measure where the time gap is measured from the time the company started to exist until now. Energy companies having a long life may have more knowledge and experience in organizing companies' operations to be more experienced in managing companies' resources. Several studies have proved this. To illustrate, Yazdanfar (2013), Fareed et al. (2016), Kaya (2015), Batrinca and Burca (2014), Alomari and Azzam (2017), Almajali et al. (2012), Lumpkin and Des (1999), and Batra (1999) argued that a positive relationship between firm age and firm performances. Consequently, the longer the company is established, the better the performance of energy companies in Indonesia. Thus, the second hypothesis is:

H_2 : Firm age has a positive effect on the performances of energy companies in Indonesia

2.4.3. Leverage

Leverage, in this case, the debt to equity ratio (hereafter, DER) is a fundamental measure of the company's finances. In this sense, it can portray the companies' financial strengths. This ratio is between equity and debt where it includes long-term and short-term debts and current liabilities (Walsh, 2003).

The funding policy of energy companies reflected in the DER ratio greatly influences the companies' profits. The higher the DER will affect the amount of profit achieved by a company. If the reflected cost of debt in the price of borrowing is greater than the cost of own capital, then the weighted average cost of capital will be more significant. As a result, the performances will be more minor, and vice versa (Brigham, 1983).

This high ratio indicates that companies will have real problems in the long term period. One of them is the possibility of bankruptcy. The greater the debt, the greater the risk is borne. Even though in a situation where the companies can manage their debt well, the existence of debt will provide a good opportunity for the companies to increase their profits. The higher the DER, the greater the trust from outside parties. This is possible to invigorate performances since large capital increases the opportunity to organize companies' operations flexibly. Thus, DER is expected to have a good impact on performances, notably in energy companies.

The empirical results reported by Qureshi (2009), Fareed et al. (2016), Matar and Eneizan (2018), Batchimeg (2017), and Dasuki (2016) have proven that financial leverage as measured by the DER ratio has a positive effect on performances. Meanwhile, Campbel (2002) and Miyajima et al. (2003) claimed that DER has a negative impact on performances.

Based on the theoretical and empirical studies elicited above, it is suspected that leverage has a positive effect on the performances of energy companies in Indonesia. Hence, the third hypothesis is:

H_3 : DER has a positive effect on the performances of energy companies in Indonesia.

2.4.4. Liquidity

Liquidity plays a important role in running the company, notably in assets management since it outlines its abilities to meet its short-term obligations. The purpose of liquidity management is to maximize profits while meeting its short-term obligations and future operational costs (Panigrahi, 2014). With this in mind, the company should resolve all the risks that potentially occur, including investment (Eljelly, 2004) because excessive investment can reduce profitability (Fama and Jensen, 1983).

Generally speaking, liquidity is calculated by comparing current assets with current liabilities or is called the current ratio. The smoother liquidity ratio will make it easier for a company to obtain high profitability. Literature studies on the relationship between liquidity and firm performance were carried out by Ghosh and Maji (2003), Muhammad et al. (2012), Ehiedu (2014), and Rehman et al. (2015). They found a positive influence between liquidity on profitability. Nevertheless, a variety of studies signified different

results. For instance, Saldanli (2012), Narware (2004), Lyroudi et al. (1999), Eljelly (2004), and Bardia (2004) exposed a negative impact of liquidity on a company's performances.

Based on the abovementioned studies, it is assumed that liquidity has a positive effect on the performance of energy companies in Indonesia. Therefore, the fourth hypothesis is:

H₄: Leverage has a positive effect on the performances of energy companies in Indonesia

2.4.5. Gas and oil company and coal company

Each type of company certainly has different characteristics, especially energy companies where the products produced also vary. Some of the energy company's products are minerals, gas, oil, coal, electricity, and renewable energy, including mining goods distribution services.

The existence of gas and oil companies in the world is very influential on the economy of oil-producing countries including the political aspect (Hassan, 2013). Findings of gas and oil are very helpful for industry and transportation in the world. Even daily household needs can also be met with gas and oil energy, such as electricity, cooking, and other needs (Bastianoni et al., 2005). This will trigger gas and oil companies to obtain good performance.

In addition, the presence of coal companies is also very important in Indonesia. The need for coal production continues to increase in line with the need for energy sourced from coal such as electricity and the need for steel and cement production. According to the Statistical Review of World Energy (2017), Indonesia occupies the top fifth position in 2016 in producing coal. This is because Indonesia has the largest coal reserves in 3 provinces, namely South Sumatra, South Kalimantan, and East Kalimantan (Indonesia-Investment, 2018). The large reserves and demand for coal in Indonesia will potentially increase the performance of coal companies.

Therefore, this study will also examine the type of energy company its influence on company performance with the following hypothesis:

H₅: Gas and oil companies have a positive effect on the performance of energy companies in Indonesia.

H₆: Coal companies have a positive effect on the performance of energy companies in Indonesia.

3. METHODOLOGY

3.1. Population and Sampling

This study deployed a population of energy companies in Indonesia listed on the IDX from 2018 to 2020. A purposive sampling method was utilized to select the samples of the entire population for further scrutiny. Intake of the population taken in such a period by considering the researchers' limitations in obtaining the data. 37 energy companies were recruited as the research samples, namely companies listed on the IDX and publishing financial reports from 2018 to 2020.

3.2. Research Variables

This study applied three types of variables, namely:

1. Dependent Variables

The dependent variable in this study is the profitability ratio covering:

Return On Aset (ROA) with the formula:

$$ROA = \frac{\text{Earning After Tax}}{\text{Total Assets}}$$

Return On Equity (ROE) with the formula:

$$ROE = \frac{\text{Earning After Tax}}{\text{Total Equity}}$$

Net Profit Margin (NPM) with the formula:

$$NPM = \frac{\text{Earning After Tax}}{\text{Sales}}$$

The three ratios above will be reduced first through Principal Component Analysis (PCA).

2. Independent variable

- Firm Size as measured by the total assets or Ln_total assets
- Firm Age as measured by the company's long-standing
- Leverage as measured by the debt to equity ratio (DER), with the formula:

$$DER = \frac{\text{total of debt}}{\text{equity}} \times 100\%$$

- Liquidity as measured by current ratio with the formula:

$$\text{Liquidity} = \frac{\text{Current Asset}}{\text{Current Liability}} \times 100\%$$

- Stat_Gas&Oil = Status of an Energy Company engaged in the gas and oil sector
- Stat_Coal = Status of an Energy Company engaged in the coal sector

3.3. Data Analysis

3.3.1. Principal component analysis (PCA)

PCA is a mathematical procedure utilizing orthogonal transformation techniques to transform a set of possibly related data into unrelated components. Principal Component Analysis (PCA) aims at simplifying the observed variables by shrinking (reducing) their dimensions. Additionally, Principal Component Analysis (PCA) eliminates the correlation between independent variables through the transformation of the original independent variables to a novel uncorrelated variable or commonly referred to as the principal component. After several components of the Principal Component Analysis (PCA) are free of the obtained multicollinearity, these components become newly regressed and analyzed independent variables for their effects. In this case, the analyzed variables with PCA were three financial performance ratios, namely ROA, ROE, and NPM.

With the Principal Component Analysis (PCA) method, the three financial ratios will gain new uncorrelated independent variables.

Independent variables have fewer amounts than original variables. However, they can absorb most of the information contained in the original variables. Also, it can contribute to the variance of all variables.

After finding the results, the three financial ratios would be utilized as dependent variables.

Suppose $x=[x_1, x_2, x_3, \dots, x_p]$ is a vector of the original variables observed with the covariance matrix $\sum(\sigma_{ij})$, then the first principal component denoted by Y_1 is defined as:

$$Y_1 = \sum a_{1j} X_j = a_1^T X$$

where:

$$Y_1 = a_{11} X_1 + a_{12} X_2 + a_{13} X_3 + \dots + a_{1p} X_p$$

$$Y_p = a_{p1} X_1 + a_{p2} X_2 + a_{p3} X_3 + \dots + a_{pp} X_p = a_p^T X$$

with:

Y_p = random variable from the original variable to the new variable,
 Y_p = original random variable, X = original random variable matrix of the form:

$$\begin{bmatrix} Y_1 \\ Y_2 \\ \vdots \\ Y_p \end{bmatrix} = \begin{bmatrix} a_{11} & a_{12} & \dots & a_{1p} \\ a_{21} & a_{22} & \dots & a_{2p} \\ \vdots & \vdots & \ddots & \vdots \\ a_{p1} & a_{p2} & \dots & a_{pp} \end{bmatrix} \begin{bmatrix} X_1 \\ X_2 \\ \vdots \\ X_p \end{bmatrix}$$

Which maximized variety Y_1 , namely $\sum a_i$, with obstacles $a_1^T a_1 = 1$.

If the covariance matrix of the vector x is \sum , then variants Y_1 is formulated as:

$$\text{var}(Y_1) = a_1^T \sum a_1$$

The transformation problem is how to select the coefficient of the linear combination so that:

$$\text{var}(Y_1) > \text{var}(Y_2) > \dots > \text{var}(Y_p)$$

The analysis results the with Lagrange function yielded a_1, a_2, \dots, a_p , as an eigenvector corresponding to the eigenvalue $\lambda_1, \lambda_2, \dots, \lambda_p$, from matrix covariance \sum . The general form of the Lagrange equation is:

$$L(x) = f(x) - \lambda [g(x) - c]$$

where:

- $f(x)$ = objective function
- $g(x)$ = constraint function
- c = constant

3.3.2. Paired-samples t-test

This test is used to compare data in a group so that it will compare two samples that are related or in pairs. The paired-samples t-test procedure was deployed to test no (no difference) between the two variables. Data may encompass two measurements with the

same subject or one measure with several subjects (Ghozali, 2009). This analysis is executed to determine the diversity of the energy companies' performances in Indonesia before and during the Covid-19 pandemic. Technically, the analysis tool applied SPSS software.

3.3.3. Panel data regression analysis

This analysis refers to a dependence inquiry of the dependent variables with one or more independent variables to predict the average value of the population (the average value of the dependent variables) based on the value of the independent variables from the time-series and cross-section data. The regression analysis results were in the form of regression coefficients for each independent variable. The analytical framework adopts the software Eviews. Here are the equation:

$$\text{Perf} = a + b_1 \text{SIZE}_{it} + b_2 \text{AGE}_{it} + b_3 \text{LEV}_{it} + b_4 \text{LIQ}_{it} + b_5 \text{Stat_Gas\&Oil}_{it} + b_6 \text{Stat_Coal}_{it}$$

where: Perf = Performance with PCA calculation results, SIZE = Firm Size, AGE = Firm Age, LEV = leverage (Debt to Equity Ratio), LIQ = Liquidity (current ratio), Stat_Gas&Oil = Company Status (1 = Gas & Oil Company, 0 = No), Stat_Coal = Company Status (1 = Coal Company, 0 = No)

4. RESULTS AND DISCUSSIONS

4.1. Data Statistic Descriptive

The collected data were 37 energy companies in Indonesia with a research period in 2018, 2019, and 2020. In particular, there were 111 data observations. Table 1 signifies a descriptive statistics calculation with SPSS processing covering minimum, maximum, mean, and standard deviation. Except for the size expressed in natural logarithms, the minimum value of \ln_size is 13.96 or USD 1.158 billion. Meanwhile, the maximum value is 22.8 or USD 7.939 billion, with an average of 19.47 and a standard deviation of 1.8403. While the other data are presented in truth. Meanwhile, data on gas and oil companies and coal companies are expressed with dummy variables so that the smallest value is 0 and the largest value is 1.

4.2. Energy Company Financial Performance

The financial performances adapt profitability as measured by various financial ratios, namely ROA, ROE, and NPM to reduce the ratio to one variable with Principal Component Analysis

Table 1: Descriptive analysis

Variable	n	Minimum	Maximum	Mean	Std. Deviation
Ln_Size	111	13.96	22.80	19.4728	1.8403
Age	111	3.00	55.00	27.9808	12.5342
Lev	111	9.65	4308.64	275.3763	622.0100
Liq	111	20.81	1007.43	191.5209	155.0059
ROA	111	-29.66	60.54	5.7243	11.99993
ROE	111	-288.07	102.75	5.1568	46.01368
NPM	111	-119.91	98.47	6.9009	31.42944
Stat_Gas&Oil_Comp	111	0	1	0.2342	0.42544
Stat_Coal_Comp	111	0	1	0.4054	0.49320

(PCA). To determine whether factor analysis is deployed to minimize the financial ratios or not, it is necessary to test by utilizing Kaiser-Meyer-Olkin (KMO) and Bartlett's T-Test. If the KMO value ranges from 0.5 to 1, then factor analysis is feasible. However, if the KMO value is less than 0.5, then factor analysis is not possible. The research results reported that the KMO value is 0.692 greater than 0.5, and Bartlett's test has a significance value below 0.05 (Table 2). In conclusion, the data can be used for factor analysis.

In a similar vein, the output of the Component Matrix is presented to investigate the utilized factors in measuring financial performances based on the highest level of correlation. Table 3 denotes that factor 1 possesses a greater value than factor 2 of the entire involved variables. For this reason, the ROA, ROE, and NPM variables can be reduced to be one variable. In this study, the new variable is labeled as the performance variable (hereafter, perf).

4.3. The Impacts of the Covid-19 Pandemic on the Performances of Energy Companies

Reduced financial performance is one of the tested variables ("Perf") with a paired difference test. In practice, it divided data into two groups, namely 2018 data as a performance indicator before the COVID-19 pandemic and 2020 data as a performance indicator during the COVID-19 pandemic. The analysis applied a paired difference test (t-test) since the data met the normal distribution requirements (Table 4). The significance value of financial performance data before the covid-19 pandemic and during the covid-19 was more significant than 0.05.

Table 5 designates that the significance value of the t-test is less than 0.05. It means that there are differences in Indonesian

Table 2: Analysis of Kaiser-Meyer-Olkin

KMO and Bartlett's Test	
Kaiser-Meyer-Olkin Measure of Sampling Adequacy	0.692
Bartlett's Test of Sphericity	
Approx. Chi-Square	97.834
Df	3
Sig.	0.000

Table 3: Component matrix

	Component	
	1	2
ROA	0.872*	-0.055
ROE	0.815*	0.538
NPM	0.829*	-0.472

Table 4: Normality test

	Bef_covid19	Dur_covid19
Asymp. Sig. (2-tailed)	0.109 ^c	0.200 ^{c,d}

Description: *Significant at level 5%

Table 5: Paired-samples t-test

		t	Sig. (2-tailed)
Pair 1	Bef_covid19 - Dur_covid19	3.562	0.001*

Description: *Significant at level 5%

energy companies' financial performances between before and during the covid-19 pandemic. Based on the gathered data (e.g. the average value of ROA, ROE, and NPM in 2018 and 2020), all data showcased a greater value in 2018. In other words, the performances of energy companies were better before the COVID-19 pandemic. It was compared to the post-pandemic period.

Table 6 provides more detail that among the energy companies studied, Coal Company has a better average performance than Gas & Oil Company both before the pandemic. This data can be seen during the pandemic in the 'average' section of each financial ratio (ROA, ROE, and NPM). Meanwhile, to see the impact of the COVID-19 pandemic on the performance of each company, see the "before the pandemic" and "during the pandemic" sections. The results found that all financial performance ratios before the Covid-19 pandemic were greater than during the Covid-19 pandemic, both for Coal Companies and for Gas & Oil Companies. So this data is in line with the test results in Table 5 that there has been a significant change in performance due to the COVID-19 pandemic.

4.4. Analysis of Factors Affecting Energy Company's Performances

In panel data analysis, it begins with model selection to determine the best model. The study employed the chow test to select the regression model. In particular, the Hausman test and the Lagrange multiplier test were utilized to have one of the common effect, fixed-effect, and random effect models.

The model testing results in Table 7 show that the best model to use is the random effect model. Furthermore, the output of the random effect regression model is shown in Table 8.

Based on Table 8, the R-squared value of 0.205 shows the magnitude of the influence of all independent variables in explaining the dependent variable, which is 20.5%. The significance value of F-Statistic is less than 0.05 so that the random effect model is very good to be used in this model. According to this model, the analysis results found that not all hypotheses could be accepted, only hypotheses 1, 4, and 6 were accepted and the rest were rejected.

We obtained an important finding in this study, that for energy companies, the company's longevity does not guarantee good performance. The age variable did not show a significant value on performance. So that the most important thing for energy companies is that companies must have qualified managers who can innovate to win global competition. Usually companies like this quickly adapt to current conditions so that the business strategy that is run will dynamically adjust to the situation. In contrast to large companies, energy companies need to maintain their financial stability. Energy companies must have large assets, especially for the needs of extracting and distributing mining goods such as coal, oil and gas, and other types of mining goods. The results of research evidence this that size has a positive effect on the performance of energy companies so that it is in line with several previous research results (Yazdanfar, 2013; Almajali et al., 2012;

Table 6: Average performance of gas and oil companies and coal companies

Type of Company	ROA			ROE			NPM		
	Average	Before Pandemic	During Pandemic	Average	Before Pandemic	During Pandemic	Average	Before Pandemic	During Pandemic
Gas & Oil Company	2.20	3.93*	(0.39)	(3.40)	11.27*	(27.43)	5.89	13.14*	(5.20)
Coal Company	12.95*	19.17*	8.69	13.60*	15.66*	10.75	9.94*	11.62*	8.43

Note: *Shows a larger ratio, this table presents the financial performance of Gas & Oil companies and coal companies more specifically, namely the average performance during 2018 to 2020, as well as changes due to the covid-19 pandemic, this data is processed using Microsoft excel

Table 7: Model selection

Testing	Probability	Decisions	
Chow test	0.0001*	Significant	Fixed Effect Model
Hausman Test	0.4743	Not Significant	Random Effect Model
Lagrange Multiplier Test	0.0053*	Significant	Random Effect Model

Description: *Significant at level 5%

Table 8: Regression analysis on the random effect model

Variable	Coefficient	t-Statistic	Prob.
C	-1.902993	-2.636852	0.0098
Size	0.086489	2.254269	0.0265*
Age	-0.007053	-1.411543	0.1614
Lev	-5.06E-05	-0.566630	0.5723
Liq	0.001068	2.675361	0.0088*
Stat_Oil&Gas_Comp	0.159164	1.029818	0.3057
Stat_Coal_Comp	0.334147	2.286928	0.0244*
R-squared			0.252408
Adjusted R-squared			0.205191
S.E. of regression			0.441763
F-statistic			5.345767
Prob(F-statistic)			0.000086*

Description: *Significant at level 5%

Fareed et al., 2016; Matar and Eneizan, 2018; Alper and Anbar, 2011; Abel and Roux, 2016; Hidayat and Firmansyah, 2017; Menicucci and Paolucci, 2016; Mehari and Aemi, 2013; and Rashid and Kemal, 2018). There is a separate note, for energy companies, that the amount of assets owned is not correlated with external sources of capital so that debt is not the best alternative. The greater the debt, the greater the leverage ratio. However, this ratio has not been able to show a significant effect on performance. The importance of working capital for energy companies does not mean that it must be supported by debt that has a large capital cost, it will burden the company's finances.

Another finding is that liquidity is a ratio that must be maintained for energy companies because companies definitely need large funds to run their business. Energy needs in Indonesia are currently getting bigger, for example, currently the Indonesian state estimates an average coal production of 200 million tons per year (Kontan.co.id, 2021). Production needs must be followed by the amount of working capital owned and will affect the liquidity ratio. Therefore, if the company's liquidity can be maintained, production will run smoothly and ultimately improve company performance. The findings of this study are in line with some of the results of research by Ghosh and Maji (2003), Muhammad

et al. (2012), Ehiedu (2014), and Rehman et al. (2015) explaining that there was a positive relationship between liquidity and firm performances.

Among the types of energy companies in Indonesia, this study specifically examines two types of companies, namely gas & oil companies and coal companies. The test results show that coal companies have a significant influence on the performance of energy companies. So that coal companies in Indonesia have better performance than other energy companies, including gas and oil companies. This is also proven by testing the types of gas & oil companies that do not affect energy companies' performance. The results of this study are certainly in line with the conditions in Indonesia that coal companies have the potential to have large profits because of the total 1,262 gigatonnes of CO₂ emissions produced in Indonesia, as much as 35% comes from coal power plants. This is in line with the steps taken by the Indonesian government to reduce greenhouse gas emissions from the energy sector. Even the Indonesian government is targeting an increase in coal production by 635 million tons during 2021. This seriousness is stated in the Decree of the Minister of Energy and Mineral Resources No.66.K/HK.02/MEM.B/2021 concerning Amendments to the Decree of the Minister of Energy and Mineral Resources No.255..K/30/MEM/2020 concerning the Fulfillment of Domestic Coal Needs in 2021. Government support for coal production is a positive signal for the growth of energy companies in Indonesia, which can improve the performance of coal companies.

The peak of the Covid-19 pandemic has occurred in 2020 until mid-2021, thereby reducing the performance of energy companies in Indonesia. However, the government's movement in spurring economic activity began to anticipate the decline in the country's economy and society. So that energy needs must begin to be fulfilled again according to the needs supported by energy companies in Indonesia. Energy needs must of course pay attention to the environment so that energy from coal becomes an environmentally friendly alternative.

5. CONCLUSION

The performance of energy companies must continue to be improved to maintain sustainability. This is because Indonesia's energy needs are so large that companies must continue to exist to meet these energy needs even during a pandemic. This study found the effect of the COVID-19 pandemic on the performance of energy companies in Indonesia where there was a significant decline after the pandemic. The decline was felt mainly by gas

and oil companies in Indonesia. Several factors were tested in this study and it was found that company size and liquidity are the most important factors to maintain the performance of energy companies. This is very reasonable because the working capital needed to run an energy company is very large so that if the company experiences a lack of funds, the company has the potential not to be able to achieve the expected performance.

Indonesia's energy needs in 2021 will be even greater. So that energy companies in Indonesia must be ready to run their companies to meet these needs. This study finds that the companies that have the most opportunity to improve their performance are coal companies. This is very reasonable because in addition to the huge demand for energy from coal in Indonesia, coal reserves are also quite abundant, so the Government of Indonesia supports it through the Decree of the Minister of Energy and Mineral Resources to increase coal production. This condition is in line with the results of this study which found that coal companies have a significant influence on the performance of mining companies. In contrast to gas and oil companies, which did not show a significant effect.

REFERENCES

- Abel, S., Roux, P.L. (2016), Determinants of banking sector profitability in Zimbabwe. *International Journal of Economics and Financial Issues*, 6(3), 845-854.
- ADB. (2020), ADB Approves \$3 Million Grant to Support Indonesia's Fight Against COVID-19. Available from: <https://www.adb.org/news/adb-approves-3-million-grant-support-indonesias-fight-against-covid-19>
- Almajali, A.Y., Alamro, S.A., Al-Soub, Y.Z. (2012), Factors affecting the financial performance of jordanian insurance companies listed at amman stock exchange. *Journal of Management Research*, 4(2), 266-289.
- Alomari, M., Azzam, I. (2017), Effect of the micro and macro factors on the performance of the listed jordanian insurance companies. *International Journal of Business and Social Science*, 8(2), 66-73.
- Alper, D., Anbar, A. (2011), Bank specific and macroeconomic determinants of commercial bank profitability: Empirical evidence from turkey. *Journal Business and Economics*, 2(2), 139-152.
- Alter, N., Syed, S.H. (2011), An empirical analysis of electricity demand in Pakistan. *International Journal of Energy Economics and Policy*, 1(4), 116-139.
- Bardia, S.C. (2004), Liquidity management: A case study of steel authority of India Ltd. *The Management Accountant*, 39(6), 463-467.
- Barney, J. (2001), Resources-based theories of competitive advantage: A ten-year retrospective on the resource based view. *Journal of Management*, 27(6), 643-650.
- Bastianoni, S., Campbell, D., Susani, L., Tiezzi, E. (2005), The solar transformativity of oil and petroleum natural gas. *Ecological Modelling*, 186, 212-220.
- Batchimeg, B. (2017), Financial performance determinants of organizations: The case of mongolian companies. *Journal of Competitiveness*, 9(3), 22-33.
- Batra, G. (1999), Job Reallocation, the Export Market, and Firm Performance: Microeconomic Evidence. Vol. 10. United States: World Bank Policy and Research, Business Environment Unit. p683-626.
- Batrincea, G., Burca, A. (2014), The determinants of financial performance in Romanian insurance market. *International Journal of Academic Research in Accounting Finance and Management Sciences*, 4(1), 299-308.
- Brigham, F.E. (1983), *Fundamentals of financial Management*. 3rd ed. Japan: The Dryden Press, Holt-Sounders.
- Campbell, K. (2002), *Ownership Structure and The Operating Performance of Hungarian Firms*, Working Paper No. 9.
- Dai, R.M. (2016), Analysis of financial performance through profitability approach at culinary center in Cimahi city. *Review of Integrative Business and Economics Research*, 5(2), 364-370.
- Dasuki, A.I. (2016), The Effect of Capital Structure on Financial Performance, *DOKBAT Conference Proceedings*. p95-104.
- DEN. (2019), *Indonesia Energi Outlook 2019*. Secretariat General National Energi Council.
- Djalante, R., Lassa, J., Setiamarga, D., Sudjatma, A., Indrawan, M., Haryanto, B., Mahfud, G. (2020), Review and analysis of current responses to COVID-19 in Indonesia: Period of January to March 2020. *Progress in Disaster Science*, 6, 100091.
- Dong, Y., Mo, X., Hu, Y. (2020), Epidemiology of COVID-19 among children in China. *American Academy of Pediatrics*, 145(6), e20200702.
- Ehiedu, V.C. (2014), The impact of liquidity on profitability of some selected companies: The financial statement analysis (FSA) approach. *Research Journal of Finance and Accounting*, 5(5), 81-90.
- Eljelly, A.M.A. (2004), Liquidity-profitability trade-off: An empirical investigation in an emerging market. *International Journal of Commerce and Management*, 14(2), 48-61.
- Fama, E., Jensen, M. (1983), Agency problems and residual claims. *Journal of Law and Economics*, 26(2), 327-349.
- Fareed, Z., Ali, Z., Shahzad, F., Nazir, M.I., Ullah, A. (2016), Determinants of profitability: Evidence from power and energy sector. *Studia UBB Oeconomica*, 61(3), 59-78.
- Fernandes, N. (2020), Economic Effects of Coronavirus Outbreak (COVID-19) on the World Economy. Available from: <https://www.mediaroom.iese.edu/wp-content/uploads/2020/03/fernandes-nuno20200322-global-recession-is-inevitable.pdf>
- Ghosh, S.K., Maji, S.G. (2003), Utilization of current assets and operating profitability: An empirical study on cement and tea industries in India. *Indian Journal of Accounting*, 34(1), 52-55.
- Güyagüler, T., Demirel, N. (2008), *Mine Valuation*. Ankara: METU Press.
- Hadi, M.F., Hidayat, M., Widiarsih, D., Murialtih, N. (2021), The role of electricity and energy consumption influences industrial development between regions in Indonesia. *International Journal of Energy Economics and Policy*, 11(3), 403-408.
- Hassan, A. (2013), Review of the global oil and gas industry: A concise journey from ancient time to modern world. *Petroleum Technology Development Journal*, 3(2), 123-141.
- Hidayat, I.P., Firmansyah, I. (2017), Determinants of financial performance in the Indonesian Islamic insurance industry. *Etikonomi*, 16(1), 1-10.
- Indonesia-Investment. (2018), *Batubara*. Available from: <https://www.indonesia-investments.com/id/bisnis/komoditas/batu-bara/item236>
- Indupurnahayu I., Setiawan, E.B., Agusinta, L., Suryawan, R.F., Ricardianto, P., Sari, M., Mulyono, D., Sakti, R.F.J. (2021), Changes in demand and supply of the crude oil market during the COVID-19 pandemic and its effects on the natural gas market. *International Journal of Energy Economics and Policy*, 11(3), 1-6.
- Kaya, E.Ö. (2015), The effects of firm-specific factors on the profitability of non-life insurance companies in turkey. *International Journal of Financial Studies*, 3(4), 510-529.
- Khan, M.A., Ahmad, U. (2008), Energy demand in Pakistan: A disaggregate analysis. *The Pakistan Development Review*, 47(4), 437-455.
- Kontan.co.id. (2021), *Cadangan Batubara Indonesia Saat Ini Mencapai 38,84 Miliar Ton*. Available from: <https://www.newssetup.kontan.co.id/news/cadangan-batubara-indonesia-saat-ini-mencapai-3884>

miliar-ton

- Lumpkin, G., Dess, G. (1999), Linking two dimensions of entrepreneurial orientation to firm performance: The moderating role of environment, firm age, and industry life cycle. *Journal of Business Venturing*, 16(5), 429-451.
- Lyroutdi, K., McCarty D., Lazaridis, J., Chatzigagios, T. (1999), An empirical investigation of liquidity: The case of UK Firms. In: Paper Presented at the Annual Financial Management Association Meeting in Orlando.
- Matar, A., Eneizan, B. (2018), Determinants of Financial Performance in the Industrial Firms: Evidence from Jordan. Available from: <https://www.researchgate.net/publication>
- Mehari, D., Aemiro, T. (2013), Firm specific factors that determine insurance companies' performance in ethiopia. *European Scientific Journal*, 9(10), 245-255.
- Menicucci, E., Paolucci, G. (2016), Factors affecting bank profitability in Europe: An empirical investigation. *African Journal of Business Management*, 10(17), 410-420.
- Miyajima, H., Omi, Y., Saito, N. (2003), Corporate governance and performance in twentieth-century Japan. *Business and Economic History*, 1, 1-36.
- Muhammad, M., Jan, W.U., Ullah, K. (2012), Working capital management and profitability: An analysis of firms of textile industry of Pakistan. *Journal of Managerial Sciences*, 6(2), 155-165.
- Narware, P.C. (2004), Working capital and profitability-an empirical analysis. *The Management Accountant*, 39(6), 279-300.
- Panigrahi, A.K. (2014), Relationship of working capital with liquidity, profitability and solvency: A case study of ACC limited. *Asian Journal of Management Research*, 4(2), 308-322.
- Qureshi, M.A. (2009), Does pecking order theory explain leverage behaviour in Pakistan? *Applied Financial Economics*, 19(17), 1365-1370.
- Rashid, A., Kemal, M.U. (2018), Impact of internal (micro) and external (macro) factors on profitability of insurance companies. *Journal of Economic Policy Researches*, 5(1), 35-57.
- Rehman, M.Z., Khan M.N., Khokhar, I. (2015), Investigating liquidity-profitability relationship: Evidence from companies listed in Saudi stock exchange. *Journal of Applied Finance and Banking*, 5(3), 159-173.
- Rendu, J.M. (2002), Geostatistical simulations for risk assessment and decision making: The mining industry perspective. *International Journal of Surface Mining, Reclamation and Environment*, 16, 122-133.
- Saldanli, A. (2012), The relationship between liquidity and profitability-an empirical study on the ISE100 manufacturing sector. *Journal of Süleyman Demirel University Institute of Social Sciences*, 2(16), 167-176.
- Samuel, Y.A., Manu, O., Wereko, T.B. (2013), Determinants of energi consumption: A review. *Internasional Journal of Management Sciences*, 1(12), 482-487.
- Short, B. (1979), The relation between commercial bank profit rates and banking concentration in Canada, Western Europe and Japan. *Journal of Banking and Finance*, 3(3), 209-219.
- Tang, C.F. (2009), Electricity consumption, income, foreign direct investment, and population in Malaysia: New evidence from multivariate framework analysis. *Journal of Economic Studies*, 36(4), 371-382.
- Walsh, C. (2003), Key Management Ratios: Rasio-Rasio Manajemen Penting Penggerak dan Pengendali Bisnis. 3rd ed. Jakarta: Erlangga.
- WHO. (2021), Coronavirus. Geneva: World Health Organization. Available from: https://www.who.int/health-topics/coronavirus#tab=tab_1
- Yazdanfar, D. (2013), Profitability determinants among micro firms: Evidence from swedish data. *International Journal of Managerial Finance*, 9(2), 150-160.